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Foreign Agriculture

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PAN AMERICAN DAY • APRIL 14

PEACE • SECURITY • COOPERATION

Foreign Agriculture

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FRONT COVER

Pan American Day

April 14, 1950, marks the sixtieth anniversary of the association of American republics, known first as the Pan American Union and today as the Organization of American States. "Peace, Security, and Cooperation" is this year's slogan as we commemorate the unity and friendship between people of the Western Hemisphere. (Photo courtesy of Organization of American States.)

BACK COVER

Products of American Agriculture

Hundreds of different foods—some tropical, some temperate, some common, some exotic—are native to the countries of the Americas.

Credit for photos is given as follows: pp. 77 and 79, Rae G. Engebretson; p. 80 (bottom) and p. 81, Ricardo Emery; p. 87, Fotobureau K. de Vries, Leeuwarden.

NEWS NOTES

TCB Official Confers on Vocational Training

Ellis Clough, Field Consultant in Agricultural Education, left Washington early in February for Brazil, Puerto Rico, Panama, Costa Rica, Nicaragua, El Salvador, and Guatemala and will return late in April. He will spend most of this time in Brazil working with W. C. Tucker, who is assigned, under Public Law 402 (the United States Information and Education Exchange Act of 1948), to the National Farm Machinery Training Center in São Paulo. He will also confer with Brazilian officials on plans for training vocational agricultural leaders.

Dr. Schreiber Goes to the Mediterranean

Dr. Walter R. Schreiber, OFAR Marketing Specialist, left last month on a 3½-month trip, which is taking him to several countries of Europe, North Africa, and the Middle East. There he will make a survey of the dried fruit and the nut situation.

Import Restrictions—U. S. Interest At Fourth Session in Geneva

Dr. Oscar Zaglits, Head, Division of Foreign Agricultural Trade and Policies, OFAR, is a member of the United States Delegation to the Fourth Session of the Contracting Parties to the General Agreement on Tariffs and Trade being held in Geneva, Switzerland. Since the recent addition of Haiti and Greece to the Contracting Parties, membership now numbers 25. Discussions at the Fourth Session of particular interest to United States agriculture will include the intensification of import restrictions, consideration of proposals to give effect to the provisions of the Havana Charter on international commodity controls, and notification of subsidies.

FOREIGN AGRICULTURE

ALICE I. FRAY, EDITOR

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Sixty Years of Pan American Agricultural Progress

On April 14, twenty-one Pan American Republics celebrate the 60th anniversary of their unity and friendship.

by JOSE L. COLOM

The basic industry of the Latin American Republics is agriculture. Small wonder, then, that the governments of these Republics have exerted themselves to make significant progress in this sector of their economy. But they have not had to work alone, for in their efforts they have had the cooperation of several inter-American and international organizations.

At the first Inter-American Conference on Agriculture, in 1930, it was recommended that a central organization be established for conducting research in crops and animals suited to conditions of the Western Hemisphere, particularly the American Tropics. Ten years later this recommendation was given substance by the Eighth American Scientific Congress, which provided that an inter-American institute of agriculture be organized by the Pan American Union. Thus was established in Costa Rica the Inter-American Institute of Agricultural Sciences, which now owns 2,500 acres of land and more than 60 buildings and carries out a widespread program of training and research devoted to four main divisions—plants, animals, engineering, and human beings.

Of significance to the development of agriculture in the Americas is the work conducted by the United States Department of Agriculture through its technical collaboration program. Under this program advice is made available to the ministries of agriculture of cooperating countries, national and local officials, and schools and colleges; joint research stations and projects are established; Latin American specialists are trained in both the United States and other countries of the hemisphere; technical information about developments in United States agriculture is made available; and technicians and other specialists are loaned to the Latin American Republics to cooperate in the solution of problems.

The Institute of Inter-American Affairs is an agency established by the United States Government to deepen the understanding and friendship between peoples of the American Republics. To achieve its purpose, the IIAA makes cooperative agreements with the Latin American Republics for the establishment of programs of sanitation, rural education, and food production.

The United Nations Educational, Scientific and Cultural Organization also has undertaken two major projects of technical cooperation in agriculture—the Hylean Amazon Project and the Haiti Pilot Project of Fundamental Education—projects which involve scientific research, publication of information, and supply of technical assistance.

The Food and Agriculture Organization of the United Nations also has a program of work in technical cooperation in Latin America. It has plans to implement the work in nutrition, forestry, and fisheries, and conferences on these subjects have already convened. The Rural Welfare Division plans to develop one major project in Latin America this year, probably in conjunction with the Inter-American Institute of Agricultural Sciences. FAO has held one conference on grain storage in Colombia, and has scheduled a second for April in Costa Rica. Like other organizations working in the field of agriculture, FAO assigns technicians upon request from the governments of various countries.

Thus many inter-American and international organizations join to aid agriculture in the Western Hemisphere, but the Latin American Republics themselves have made tremendous efforts in the past 25 years to improve their agriculture. Most of them have efficient departments of agriculture and facilities for research and training. Their interchange of students has increased considerably in the past 10 years, and every day a greater number of agricultural experts become available for service in these countries.

Mr. Colom is Chief, Division of Agriculture and Conservation, Organization of American States.

Uruguay Develops A Modern Pea Industry

by CHARLES H. WHITAKER

Private capital, scientific research, and farming ability have joined forces in Uruguay to produce a modern canning pea industry, which is adding more than half a million dollars a year to the national income of that country.

The 5-year-old venture is using up-to-date farming practices and modern mechanical equipment. It is growing rapidly. Its United States commercial sponsor even foresees the eventual possibility of supplying canned peas to foreign markets.

Uruguay's pea production is centered in the rich agricultural area surrounding the town of Rincón del Pino 50 miles northwest of Montevideo. Here, growers are raising peas on a 5-year rotation. Plantings are usually made in 60- to 185-acre plots and so planned that there will be a daily harvest of 75 acres, which is the capacity of the company's present canning installations.

In order to encourage the production of this crop, the company's agents contract with individual farmers for a given plot of land over a 5-year period. To carry out the rotation the plot is divided into five parts. The first year the coarse sod of one part is plowed and seeded with corn. The second year this plot is in excellent condition for peas, which are drilled together with red clover. When the peas are harvested, the clover takes their place and is subsequently turned under for green manure. The third year, beets or carrots are planted after which the land is put back into permanent pasture grasses for 2 years and used as grazing land. Then it is ready to reenter the rotation scheme again.

Modern pea-canning plant in Montevideo.

Pea-shelling near Montevideo. Freshly cut vines are fed onto conveyors as shown. The shelled peas are canned; the threshed vines are used for feed.

This system, bringing a fresh plot into pea production each year, has brought a return as high as $80 per acre for the land used in growing peas, which is one and a half times the value of the land itself. In addition, farmers have obtained a good return from carrots, beets, and corn during other years of the cycle and have been able to graze their cattle on excellent forage for at least 2 years since the liming and fertilizing for the pea crop has a lasting effect.

Carefully controlled studies of light, heat, soil, and rainfall factors have put this industry on a scientific basis. The soil is prepared for peas by plowing to a depth of 8 inches. Fertilizer of the type 2–12–4 (nitrogen, phosphates, and potash) is applied at the rate of 700 pounds per acre 8 days before the peas are seeded. Then the pea seed, which has been inoculated with nitrogenous bacteria in lampblack and water, is drilled in 1 inch deep in rows 7 inches apart.

Ten days after seeding, the fields are rolled with a heavy steel roller. This crushes the tender pea vine, now barely 2 inches high, but it has been found that the retarding of the top in this way produces a much stronger root growth, two or three stems per root instead of just one, and eventually a much higher yield.

There are at present no serious diseases or insects that have become a problem to this industry in Uruguay. The practice of taking up the pea vines during harvesttime and converting them into cattle feed, along with the 5-year rotation program, has prevented the pea aphid and pea weevil, which are sometimes troublesome, from getting a start.

Sixty-two days from planting day for the "Alaska" variety (64 for "Profusion" and 65 for "Pride"), the pea vines are approximately 18 inches high and each has from four to seven well-formed pods containing from six to eight peas, along with half as many undeveloped pods. As the crop approaches maturity the shearing strength of sample pickings is tested regularly by a specially developed electric "tenderometer" by which the exact day when the crop should be harvested, in order to produce the best grade product, can be accurately determined.

A special type of pea-harvesting machine, cutting a 7-foot swath, severs these vines within an inch of the ground and deposits them in windrows, which are picked up almost immediately by trucks and transported to the batteries of United States pea-vining machines.

Mr. Whitaker is Second Secretary, American Embassy, Montevideo, Uruguay.

The principal part of this machine is a large rotor like an enclosed lawn mower, about 7 feet in diameter and 15 feet long, which revolves at approximately 70 revolutions per minute. The pea vines are fed onto a conveyor belt to the center of this revolving rotor and, in falling, are struck a hard sharp blow by the paddles of the rotor, which sends all the peas mature enough for canning flying out of their pods to the bottom of the machine, where they are sifted, cleaned, and transferred to waiting trucks. Within 2 hours these peas are being processed in the canning factory. Harvesting begins before daylight and stops in the early afternoon so that all peas harvested are canned not only the same day, but within approximately 2 hours from harvesting.

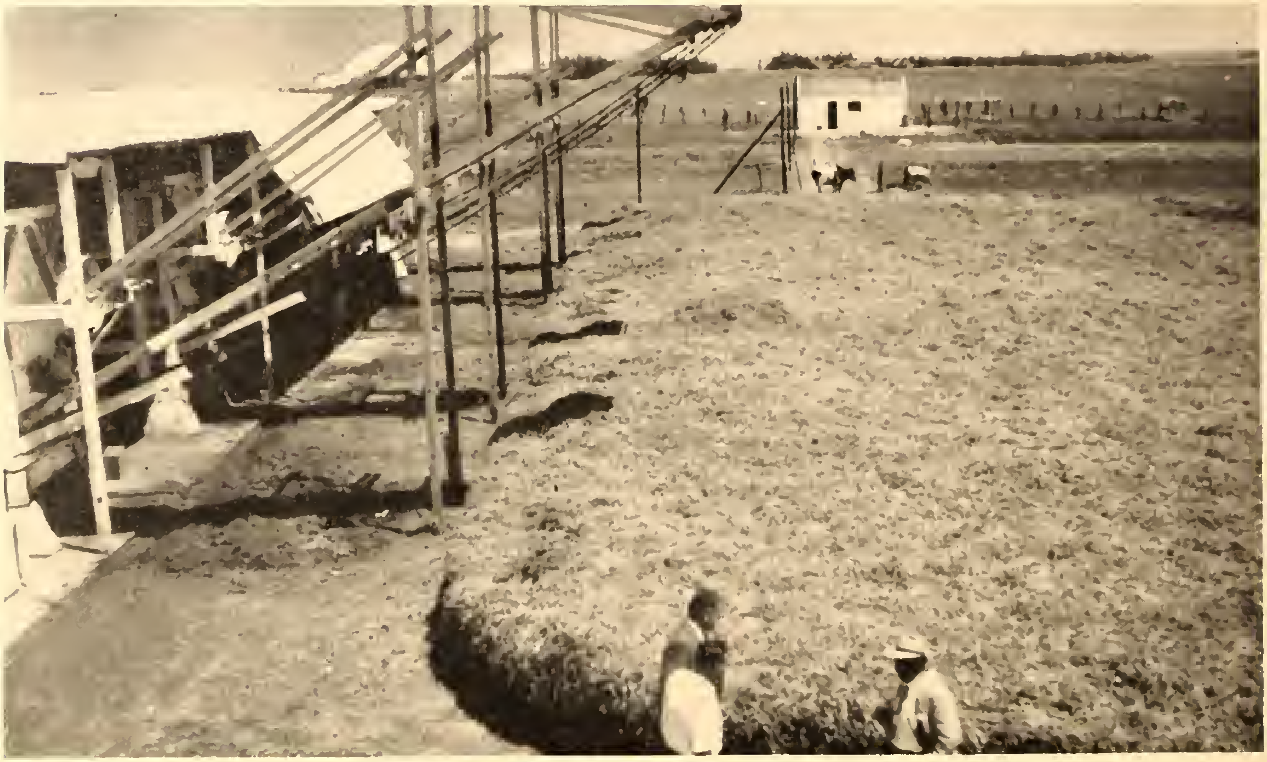
Previously the canning plant packed three grades of peas—*extra fine* (the small juicy immature seeds), *medium,* and *large* (the mature, mealy ones). Now they are canned "run of the pod" as the product has been proved to have a better flavor and larger demand when put up in this way.

A valuable byproduct of the pea industry is the ensilage made from the pea vines. As the vines come from the shelling machines, they are stacked in large piles. An employee adds salt and molasses as the pile is built up, at the rate of about 10 pounds of salt and 3 pounds of molasses per ton. This product cures in about 6 months, at which time it has the odor, texture, and appearance of good plug-cut tobacco and is relished by beef and dairy cattle. When properly cured, these stacks will keep indefinitely in open fields. Ensilage is usually produced at a rate of about 10 tons per acre. A ton will feed four large cattle for 3 months.

During the drought 2 years ago, it is probable that pea-vine ensilage saved 1,600 head of dairy cattle in the neighborhood of Rincón del Pino.

In 1948, consumption of canned peas in Uruguay amounted to 198,000 cases of 24 No. 2 cans, about 1.47 pounds per capita. This figure is considerably lower than consumption figures in the United States where in 1945, for example, per capita consumption amounted to 7.4 pounds. Therefore, if per capita consumption in Uruguay were to equal that in the United States, it would take approximately 650,000 cases—about three times the present production—to supply the local market.

Technicians in the canning plant are continuing to modernize their methods and expect to be able to reduce production costs considerably. If output



Vines from the pea-shelling machines are stacked in the field and used as ensilage.

reaches 500,000 cases, the cost of production in Uruguay might be equal to or even lower than the cost of producing canned peas in the United States.

At the present time there are about 20,000 acres of land devoted to pea raising in Uruguay. As an industry, it is important to Uruguayan agriculture and profitable for participating farmers. They not only get a good cash return from their land but also find that the soil on their farms has been improved after the 5-year program. Nitrogen is fixed in the ground by the leguminous root systems of the pea vines, and lime, commercial fertilizers, and humus have been added. Furthermore, contracting farmers have available a high grade of pasture, not only providing bulk but having fattening qualities as well. Perhaps even more important are the stacks of pea-vine ensilage left after the pea crop is harvested. These provide a storehouse of food for winter and for the lean years when droughts cut down the amount of natural forage and sometimes cause serious losses in the cattle and dairy industry.

During the past 5 years the pea industry has grown steadily and now adds $600,000 U. S. to the national income of Uruguay. The quality of the product is high and production costs are low. According to some predictions, about $250,000 worth of Uruguayan canned peas will be sold in the dollar area this year—a substantial contribution to the amount of foreign exchange available to Uruguay.

From the standpoint of soil, climate, and rainfall, large areas in Uruguay are adapted to the production of peas. The relatively long period of cool, moist, spring weather is particularly advantageous. With up-to-date methods and the ample experienced labor that is available to harvest and can the crop, the pea industry is one that could be expanded rapidly. Production in the next few years will probably depend almost entirely on the export markets that Uruguay can find for high-grade canned peas of the type and standard sold in the quality markets of the United States.

Reading about... Foreign Agriculture

Forage Crops, by Gilbert H. Ahlgren, illus., 418 pp. McGraw-Hill Book Co., Inc., New York, 1949. $5.

The author is professor of farm crops at Rutgers University. In the first part of his book he presents, one by one, each of the important hay and silage crops; in the last part he discusses matters that apply to all the crops—hay mixtures, for example, and soil improvement, preparation of seedbeds, making hay and silage, and control of harmful insects.

The discussions are well-documented and are accompanied by scientific data gleaned from a great many authoritative sources. Information is up-to-date through 1948 and includes recent improvements in the techniques of management and methods of seeding, advances in hay storage, and such new aspects of growing forage crops as seed placement, grassland farming, making grass silage, and quality production.

World's Largest Dairy

By HENRY W. SPIELMAN

Soon the thousands of milk buffaloes now scattered throughout Bombay city will have been concentrated in a modern dairy currently being built at Aarey, 20 miles away. When it is finally completed, in 1952, it will consist of 32 units and will accommodate nearly 20,000 animals. Already 7 of these units have been finished and more than 3,000 buffaloes have been moved from Bombay to occupy them.

Almost all of the milk used in Bombay comes from buffaloes. As far back as anyone remembers, herds of these animals have been kept in the city as a source of fresh milk. At present there are more than 15,000 buffaloes within the city limits and 50,000 in Greater Bombay. Individuals own them: some have only a few; others have several hundred. But small herds or large, the animals are kept in crowded pens throughout the city, behind the walls that line the streets. Even from the high terraces of Marble Arch, Kamani House, or others of Bombay's fashionable apartment houses, one can look directly down upon these cattle pens.

In these pens the buffaloes are confined both day and night, and in these pens they are milked, under conditions that are far from sanitary. Their keepers sleep with them, on cots hung from the rafters. Feed is scarce and expensive. There is no grass or good hay; but the animals are fed a highly concentrated diet to make up for these deficiencies. Disposal of manure poses a difficult problem. Much of it is thrown into the storm sewers to be carried out to sea, but in dry weather this practice is especially objectionable because the manure accumulates.

Most of Bombay's milking buffaloes are stabled in open sheds scattered throughout the city.

Other difficulties also beset the owners. Many of them cannot afford to buy cattle stables and must lease them, at rentals that are high in relation to the adequacy of the accommodations. The high price of milk, together with the scarcity of feed, forces the owners to recognize as good economy only those practices that the urgency of the present demands; and so they kill the newly born buffalo calves and sell many of the dry cows to the butcher—practices that are gradually depleting the buffalo population of all the surrounding country.

Distribution practices are primitive and unsanitary. Many consumers buy their milk directly from the milk *walla,* who carries it to them on his back in a large brass *kandee*, or in two 5-gallon jugs hanging from each end of a pole laid across his shoulders. These containers have covers made from straw or grass, which serve only to pollute the milk even more. Each purchaser comes out into the street and fills whatever container he has brought with him, dipping it down into the milk.

Moving the buffaloes out to the new dairy farm at Aarey will change all these conditions and will benefit all concerned—the consumer, the producer, and the buffalo.

Each of the dairy's 32 units will accommodate approximately 500 head. The building for each unit will be of brick and concrete, with floors of washable concrete, and will consist of 4 wings of stalls connected by one long building across the front. In the latter will be 2 receiving rooms, to which the milk of each animal will be brought and where it will be recorded. At the rear of each wing will be rooms for mixing the feed according to specifications set up by trained Government workers. Stalls will be washed down twice a day, and disinfected. By the time the project is completed, there will be a hospital to provide modern veterinary care.

Around each unit 5 acres are being planted to the highest yielding grass obtainable. These plots will be fertilized by liquid manure from the stalls, and the green grass will supplement the diet of the animals.

In addition to the grass plots, each unit is to have an area for young animals, dry cows, and bulls. It is planned that soon a second farm will be available nearby as quarters for the dry cows and young animals.

Owners of the buffaloes will retain possession of their animals; and the Government will supply them with feed at cost and charge a rental on the buildings that is slightly lower than that asked in Bombay. Each cow will receive feed in proportion to the milk she produces. Owners will sell their milk on a butterfat-content basis to a Government-sponsored cooperative processing plant located in the center of the farm. This plant will filter the milk twice, pasteurize it, bottle it, place it in cold storage, and send it by truck to central points throughout the city of Bombay. From these points, it will be delivered to distributing agencies. At present, little milk from the dairy is being delivered directly to dwellings, and most consumers go to Government depots to buy it.

Owners of the buffaloes have shown practically no opposition to moving to the farm, for conditions there are better for them, as well as for the animals. They are being supplied with houses and, when the project is completed, will have schools and a hospital.

The plan for this new milk producing and distributing center took form in the mind of D. N. Khurody, Milk Commissioner for Bombay Province, who for years had been deploring the unsanitary conditions under which milk was being produced and sold in the city. The Government of Bombay is investing nearly Rs. 30,000,000 ($6,000,000) in the project; but, as Mr. Khurody points out, that is no more than the Government of Bombay spent for a milk subsidy in 1944. Besides, the dairy will be a self-liquidating investment, and the paid-in funds will be used for more units.

Mr. Spielman, Agricultural Attaché, American Embassy, Karachi, Pakistan, was Consul (Agricultural), American Embassy, Bombay, India, when this article was written.

Korean Republic's Food Situation*

by T. O. ENGEBRETSON

For the first time since the end of the war, South Korean farmers are producing enough food to meet the needs of the country. With rice crops in the past two seasons among the largest in history and an excellent crop of summer grains in 1949, the heavy food imports of past years—mostly from the United States—are no longer necessary. No net cereals imports are planned this year by the Economic Cooperation Administration. Instead, ECA officials have been urging the Korean Government to disregard the emotional prejudice against exporting food to the Japanese and sell them a minimum of 110,200 short tons of rice, then to import an equal calorie value in cheaper barley or millet. In this way the Government will make a net dollar profit from exports without reducing domestic food supplies. Imports of all cereals except wheat and wheat flour ceased in December 1948 and these stopped the following June.

Almost two-thirds of the inhabitants of South Korea are engaged in farming the 6.5 million acres under cultivation. Cereals are produced on about three-quarters of the cultivated acreage and leguminous crops—principally soybeans, field beans, and peanuts—on another tenth. Vegetables, fruit, and various other crops are grown on the remaining acreage. Grains and pulses, which utilize most of the cultivated land, provide about 83 percent of the caloric intake of the average Korean diet. Rice, the most important food, supplies more than 60 percent.

An important source of vitamins in the Korean diet, particularly during the winter season, is a relish called kimchi. It is made of Chinese cabbage or turnips mixed with fruit, red pepper, fish, garlic, watercress, and ginger and preserved in brine in large earthenware jars. It is enjoyed greatly by the Koreans but may feel like liquid fire to the tender palate of a Westerner.

Postwar Food Problems

During the 20 years prior to Pearl Harbor, annual Korean food exports—mostly rice—were higher than food imports. To a substantial degree the export of rice from Korea during the Japanese regime was at the expense of the nutritional needs of the Korean people. Japan used Korea as a "rice bowl" to supplement its own food supplies. During the 35 years of Japanese domination the quantity of food available to Koreans decreased markedly. One-third to one-half of the annual Korean rice crop was sold for export. As a partial offset the Japanese brought cheaper millet, sorghum, and soybeans into Korea from Manchuria, where agricultural production also was under strict control. The pattern of exports changed greatly during and after the war as a result of the changed relationships among Korea, Manchuria, China, and Japan, the decrease in food production in South Korea, and the increase in population.

The significant drop in food output after World War II was both the result of a decrease in planted acreage and a decline in per-acre yields. The planted acreage for 1946 was only 79 percent of the 1930–36 average, and production decreased even more.

In 1945–47, an important reason for the less-than-normal production was unfavorable weather for the winter crops. More than 60 percent of the summer grains planted for harvest in 1945 were frozen, in 1946 more than 20 percent of the summer-grain production was destroyed by floods, and in 1947 a cold

Korean farmers carrying their allotment of imported fertilizer from the railroad to their farms.

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*Based on reports by the American Mission in Korea.

winter and dry spring were very unfavorable for the production of cereals harvested in June and July.

Another reason for the drop in output was lack of fertilizer. During the war years, Japan utilized Korea's commercial fertilizer production facilities to produce war chemicals, with the result that the amount of commercial fertilizers available for crop production declined. Since almost all of Korea's fertilizer production facilities are located in North Korea, the division of Korea at the 38th parallel cut South Korea off from its normal source of supply after the war also. The decline in production was also partly the result of a decline in the extent of double-cropping, but it was in larger part caused by the breakdown of all the various rigidly enforced controls inherent in the Japanese system of directing agricultural production, which involved acreage allotments, supplying of seeds, rationing of fertilizers, crop collection, and such.

The Japanese lost control of the situation in Korea as World War II drew to a close. The Korean appetite for Japanese administration had never been keen, and when the fortunes of war turned against their oppressors they were quick to utilize the opportunity of acting like free citizens. The highly organized system of colonial economic controls affecting crop production, collection, and rationing that the Japanese had instituted collapsed amidst the exuberance and chaos of a liberation atmosphere. Food output had, therefore, declined significantly by 1946, but a food shortage was not anticipated by United States authorities at the beginning of the Korean occupation.

Not long after, however, it became evident that the 1944 rice crop was only fair and that the 1945 summer-grain production was only 36 percent of normal. By that time the usual grain imports from Manchuria had ceased. The United States Military Government found it necessary in 1946 to seize all food warehouses and to institute rationing controls as a means of assuring the nonfarming population at least a minimum of subsistence. Along with rationing, there was established a grain-collection program because it was evident that rice could not be purchased on the open market at reasonable prices. The National Food Administration was established in April 1946 to administer the collection and control program.

The repatriation of one and a quarter million Koreans from Japan, Manchuria, China, and elsewhere, together with the influx of nearly a million from Russian-occupied North Korea, magnified the seriousness of the food shortage in South Korea. Moreover, the rate of natural increase in Korea is probably as high as or higher than that of any other country in the Orient. The natural increase, the repatriates, and the refugees from north of the 38th parallel swelled the population from an estimated 16.3 million at the initial stage of the occupation to about 20.5 million at present.

Early in the occupation, therefore, it was decided that (a) *fertilizer* must be imported to restore agricultural production to prewar levels, (b) *food* must be imported to prevent starvation and to assure the urban population of at least a subsistence diet until production could be increased, (c) *rationing controls* and Government *collection of food grains* were necessary to insure the equitable distribution of the available food supply at a reasonable cost to the consumers.

Fertilizer is highly important to crop production on Korean farms, which have been intensively cultivated for the past 4,000 years. Korean farmers, generally, conserve all of their waste organic materials for use in crop production. Such organic materials, however, are not sufficient to maintain agricultural output at the desired levels. USAMGIK[1] and, since January 1, 1949, ECA have made a continuous effort to increase food production by every practicable means, one of the most fruitful being the employment of commercial fertilizers. The fact that self-sufficiency in food has now been attained may be attributed, in large part, to the importation of commercial fertilizers under United States-financed aid programs. As shown in table 1, imports of nitrogen, phosphate, and potash are now being made available in significant

TABLE 1.—*Fertilizer imports, Republic of Korea, 1946 through December 1949*

[Equivalent metric tons [1]]

Year [2]	100-percent nitrogen	100-percent phosphate	100-percent potash	Total
1946–47	30, 400	5, 069	4, 412	39, 881
1947–48	78, 887	24, 073	3, 435	106, 395
1948–49	77, 485	60, 339	23, 606	161, 430
1949–50 [3]	61, 016	12, 853	3, 819	77, 688
Total	247, 788	102, 334	35, 272	....

[1] A metric ton equals 1.1023 short tons.
[2] Fiscal year beginning July 1.
[3] 6 months.

Source: Food and Agriculture Division, ECA, AMIK.

Mr. Engebretson is Regional Specialist, Far East Division, OFAR.

[1] United States Army Military Government in Korea.

Vegetable market in Seoul.

amounts. Fertilizers comprise almost one-third of the total tonnage and are the largest single item by value imported under the ECA aid program. A continued high crop production in South Korea depends on an adequate supply of commercial fertilizers.

In carrying out its plan to collect and ration food, USAMGIK collected, during the first full "rice year" (December 1, 1945, to December 1, 1946), more than 200,000 short tons of grain from Korean farmers and imported nearly as much. It was then possible to provide the nonfarm population with 250 to 350 grams per person daily, the ration varying by occupational group—355 grams short of the established goal.

In the second year of the occupation, more than three times as much grain was collected as in the preceding year and about 2½ times as much was imported.

During the first half of the third year it was possible, through the collection and rationing program, to maintain a ration of 300–350 grams to the nonfarm population. The 1947–48 grain collections had grown to more than 930,000 short tons and importations to nearly 325,000 tons.

Production of summer grains in 1948 was close to prewar levels, but the 1948–49 Government rice-collection program was only partly successful. The new Republic of Korea was established on August 15, 1948, and political considerations were largely responsible for the lack of enforcement of the collection program, causing it to be abandoned in March 1949. Rice collections at that time dropped to about 645,000 short tons, only about 50 percent of the goal.

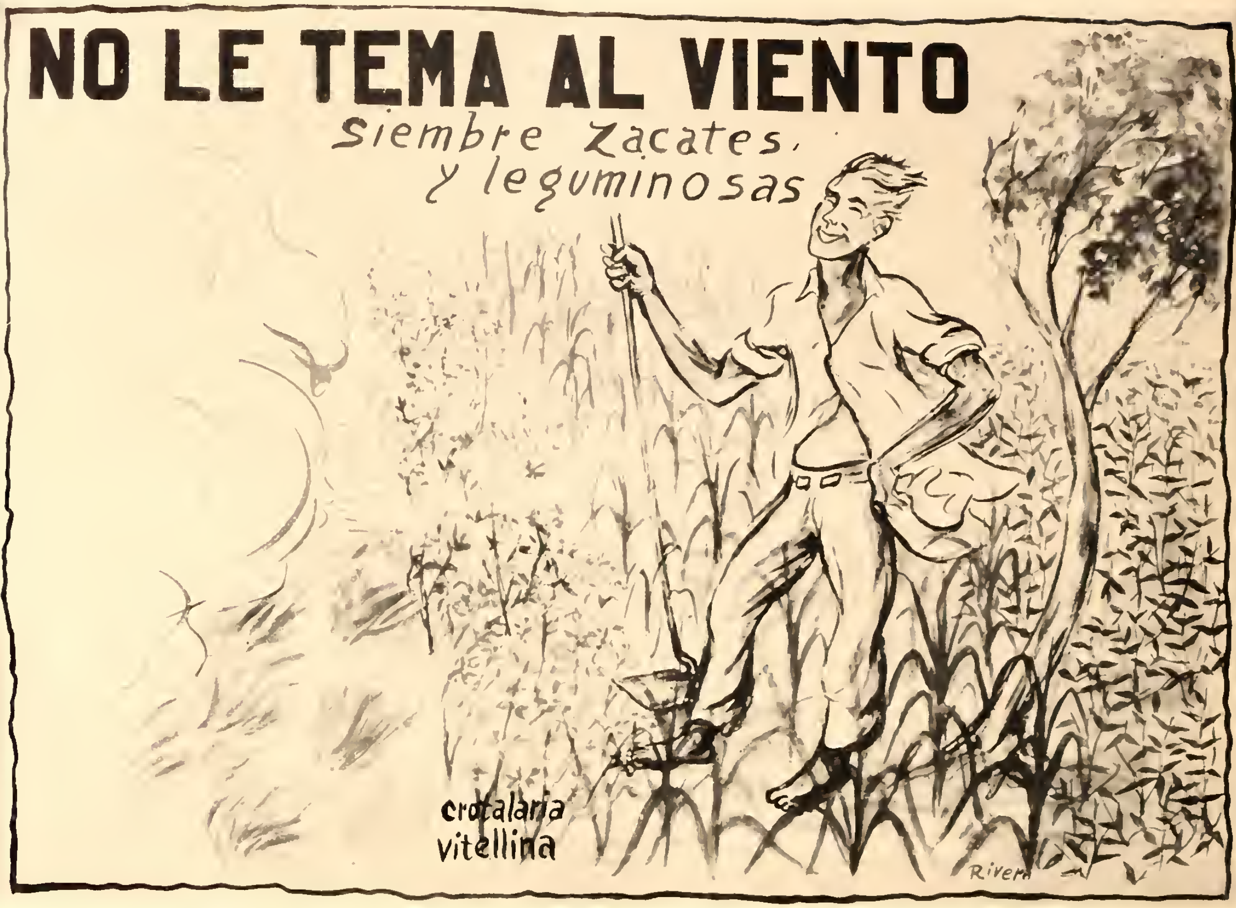
One of the principal difficulties encountered in the food-distribution program in Korea was the common practice of padding the ration rolls with names of nonexistent individuals. During 1948 an average of more than 9.5 million people, or almost half of the total population, were listed on the ration rolls. Concurrent with the discontinuance of the collection program and the subsequent decline in Government-held stocks of grain, it became necessary to review the ration lists and to institute forceful measures to eliminate persons who were not qualified to receive rations. As a result, the rationed population was reduced by almost half and the amount of the ration by about 20 percent. Government rationing plans for 1950 envision that not more than 2.3 million individuals will receive rations from Government stocks. Almost half a million of these are classed as "destitute." It is possible that further reductions in rationed population may occur during 1950.

Food-grain collection was reinstituted for the 1949–50 crop year. In 1949 the quantity of summer grains collected reached 106.3 percent of the established goal. In addition, as of February 2, it was estimated that more than 92 percent of the 1949 goal of polished rice had been bought by the Government.

The successful implementation of these two grain-collection programs may, in large part, be attributed to the liberal terms of purchase and the incentive goods accorded Korean farmers by the Government. Under the terms of the program farmers receive about the equivalent of the open-market price for rice sold to the Government. Part of the purchase price is paid to them in cash, part in certificates redeemable in fertilizer, and part in cotton cloth.

Good crops, plus the successful grain-purchase programs, have resulted in an improved food situation in South Korea, which has strengthened materially the economic position of the Republic in its second year.

El Salvador's Agricultural Story



"Don't be afraid of the wind—grow forage crops and legumes. Then you can laugh at the storms that cause erosion."

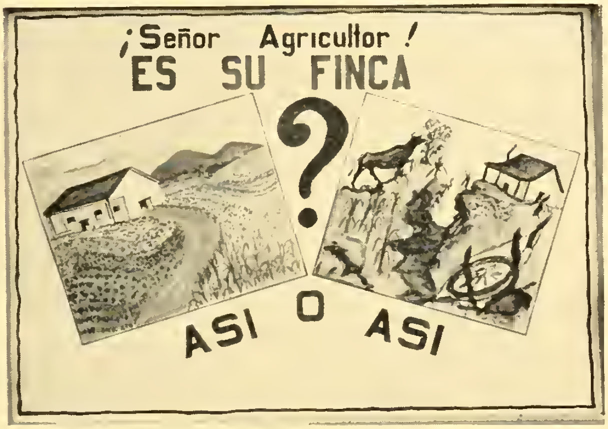
"Use better chickens, take care of them, feed balanced rations. You'll have healthier chickens, more eggs, at less cost."

"See these fiber plants? They are new to El Salvador. One is called kenaf, the other ramie. They may be among your cash crops of the future."

"Look in those microscopes. The tiny organisms you see there are plant enemies. On the right, papaya mildew. On the left, coffee root rot."

Photographic work was made possible by funds provided through the United States Interdepartmental Committee on Scientific and Cultural Cooperation.

"Corn? Señores, we can increase our corn yields by 25 percent, maybe 50 percent. To do it we must stop erosion, use green manure crops, and plant improved varieties."



"Mr. Farmer: Here is your farm! Will it be like this? Or this?"

Modern techniques of visual education are bringing to farmers of El Salvador a valuable story of better farming. It is one they can profitably apply to their own lands. The story-teller is El Salvador's Centro Nacional de Agronomía, the 7-year-old agricultural station in whose technical work the United States Department of Agriculture cooperates. Two thousand visitors saw and heard the story in November at an exposition at Santa Tecla, near San Salvador. Since then the 85 exhibits have toured the country by rail and 30,000 more Salvadorans have learned of new ways to farm better. Artist sketches, photographs, live materials, and models are used.

Farming Under the Midnight Sun

Finland's plant scientists are unveiling some special agricultural problems that exist where winters are cold, summers are short, and sunlight intensity is low.

by ONNI POHJAKALLIO

Finland is situated between latitudes 60° and 70° N. This means that nearly a third of the country lies within the Arctic Circle. Hard winters and short growing periods present special problems to all of Finland's agriculture. Our research, therefore, must pay special attention to the development of crops that have great resistance to cold and an early maturation in summer.

For a long time the influence of temperature on the development and growth of cultivated plants has been studied here. Since 1947, when the University of Helsinki obtained an experimental farm deep in Lapland at Inari Muddusniemi (about 69° N.), the influence of the length of day has been added to the investigation.

In the northern parts of Finland the sun does not set during June and most of July. Even in the south, the days are nearly 19 hours long in the middle of summer. However, the effect is not entirely comparable to long hours of sunlight in a temperate zone. Since the sun's orbit is rather low here, the intensity of its light is diminished. In fact, the total radiation reaching the surface of the earth during a typical long day in northern Finland is 5 to 10 percent less than that received during the much shorter summer day of northern United States or lower Canada. Also, northern Finland experiences much cloudiness, further reducing the effectiveness of the sunlight. To these conditions can be added the fact that a considerable amount of radiation is expended in melting the snow and in warming the earth after the winter. The warm Gulf Stream is helpful, however, and the temperature in Finland is not so unfavorable as in many other areas of similar latitude. The normal mean temperatures of May-September in Helsinki and Inari vary from about 45° to 50° F.

Even though the winters in northern Finland are severe, the temperature sometimes falling to about −60° F., generally frost does not seriously injure the plants, which are wintering under a thick blanket of snow. On the contrary, the temperature under the snow often rises so high that many fungi spread very rapidly. These pathogenic fungi are the worst scourge of the grasses and herbaceous legumes in North Finland. Some of them appear to be injurious in the southern parts of the country also.

Wintering cultivated plants in Finland is not so much a problem of the severity of the winters, then, as it is one of the photoperiodic effect of the length of the summer day. Under long-day conditions, cultivated plants from more southern latitudes do not become sufficiently seasoned for a winter rest. This is to be expected from their general form and structure but it has also been demonstrated by direct experiments. For instance the Canadian grasses and clovers, which in their home country endure very severe frosts, overwinter comparatively badly in Finland where the summer day is longer and the autumn is shorter. In one field experiment, even the Finnish red clover wintered best when it received only 10 hours' illumination daily in the summer. The beneficial effect of the short day on the wintering of plants probably results in part from its causing an enlargement of the subterranean parts of the plant. It is, however, obvious that plants of northern regions are able to pass the winter comparatively well even when grown in long-day conditions.

Temperature

The cold resistance of wintering plants is of particular importance in parts of northern Finland where the snow cover is usually thin. On this account, in the northern coastal regions of the Gulf of Bothnia, only the most resistant native varieties of rye can be cultivated, for example. None of the rye strains is yet wintering well enough here. The most resistant domestic varieties do not thrive until somewhat farther south, and in the south of Finland rye strains are cultivated whose resistance to cold is still lower. The foreign (Swedish, German, etc.) varieties, however, have proved to be too sensitive to cold throughout Finland

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Dr. Pohjakallio is Professor of Plant Biology and Pathology and Chief of the Division of Plant Pathology, University of Helsinki, Finland.

and for this reason have not got a foothold in practical agriculture. In field experiments, however, some of them have endured the mildest winters, and in these cases they have yielded quite the best harvest of all the varieties in the following summer. In the case of winter wheat the results have been the same.

It has been observed quite generally that cultivated plants that are very resistant to cold predominate in regions of severe climates but have obtained little popularity in more favorable climatic circumstances. This may depend chiefly upon the fact that the resistance of plants to cold, except the so-called supercooling phenomenon, is based upon the hardening process. Those most resistant to cold are the most easily hardened plants, that is, the plants for which relatively high temperature, even in long-day conditions, is sufficiently effective to harden them. Plants like these, however, have to remain in a partly hardened state during a great part of their vegetative period, which means that their vitality is correspondingly lowered.

Thus there is an antagonism between the resistance to cold and vigorous vegetative growth, which in practice often means that the cold-resistant plant is not very productive. So even in plant breeding carried out in Finland, there has been no success in fully combining high resistance to cold with great yielding capacity of the winter cereals, but it has been necessary to compromise in one or other of these characters. And depending upon which of these characters of the variety predominates, the variety has itself "chosen" the cultivated region to which it belongs. In the breeding of grasses and clovers, however, it has been possible in part to avoid the antagonism. By lengthening their growth period, yields have been increased, even if the growth of the crop, owing to the easy hardening, has been slow. Thus, for example, in the case of red clover there are varieties that are both resistant to cold and relatively productive. They are, however, so late that the seed crop has usually only sufficient time to ripen in South Finland.

In the development of a potato resistant to night frosts, the antagonism between cold resistance and vigorous vegetative growth has caused special difficulties too. This is natural because cold-resistant potato varieties have continually to be in so hardened a state that they are able to resist a quite unexpected frosty night. So the breeding of cold-resistant potatoes, started in Finland in the early 1930's, and based on the crossing of the cultivated potato and of the wild-potato species (*Solanum acaule* and *S. demissum*), had to be discontinued because the cold-resistant strains were characterized by a too low yielding capacity. During recent years this breeding work has been resumed, however, and the great frost damage, for instance in 1949, indicates that at least in those regions where night frosts occur nearly every year, even the potato varieties of relatively low yielding capacity may prove valuable if they resist cold.

One hour before midnight, and the sun shines over the lake at Helsinki University's experimental farm.

Cross-breeding potatoes. Finland's scientists are trying to develop high-yielding potatoes that resist the cold.

Frosts often damage the cereals too. For summer cereals, however, the shortness of the growing season is the most important consideration. Thus, the desired summer cereal is one that above all matures sufficiently early. Owing to the antagonism between early maturation and yielding capacity, a compromise has to be reached on the yielding capacity of the variety. So from the extensive breeding data of the Division of Plant Breeding, Central Experimental Station, Jokioinen, it has been calculated that earlier maturation, as compared with the oat variety Goldrain II, has been proportional to an average of 1.33-percent reduced yielding capacity per day. There has not yet been sufficient investigation, however, to show what significance the vernalizing effect of low temperature might have on the summer cereals in the climatic conditions of Finland. Generally the vernalization effect acts only slightly in the early summer cereal varieties, however.

On the other hand, in the cultivation of biennial root crops the vernalization effect, together with the effect of the length of the summer day, is worth consideration. Owing to the bad seed situation after the war, it was only possible to buy seeds of root crops from relatively southern countries. These seeds, sowed in Finland, came into flower early. And, as a result, they gave small yields of bad quality.

Length of Day

It has been shown that length of day also has a very great effect on the development of summer cereals and of the pea. When the oat and summer wheat varieties common in Finland have received only 10 hours of light daily in photoperiodism experiments, they have not formed heads during the whole summer. The development of barley and peas in these conditions was also very slow. However, the very earliest barley varieties have reached maturity though they have grown in a day-length of 10 hours. It seems, however, in the light of these investigations, as well as of the calculations that take into account the sum of C-degrees above freezing-point for the period between seedtime and heading, that a day still longer than the summer day of South Finland has not in practice hastened the development of summer cereals. Thus within the compass of Finland's frontiers the temperature of the summer is the decisive factor determining the speed of ripening of summer cereals. And because the temperature in North Finland is lower, summer cereals demand a longer growing season there. The cultivation of cereal crops, especially of the summer cereals, in the most northern parts of the country is therefore more uncertain. Not even the earliest barley varieties have sufficient time to ripen in that region every year. In North Finland it is therefore rather usual for the summer cereal to be cut when still green as fodder.

A daily light period sufficient for crop yields in South Finland has proved insufficient for some plants at least in the most northern parts of the country where the intensity of light is lower. The plants have, however, been able to compensate for this deficiency by prolonging their daily assimilation time. Thus the yields of many grasses and clovers have continuously been increased when the daily light period has been still longer than 17 hours. As regards quantity, the 17-hour day has been nearly sufficient for the yield of summer cereals, however, even in the most northern parts of Finland. It has also been sufficient for the potato.

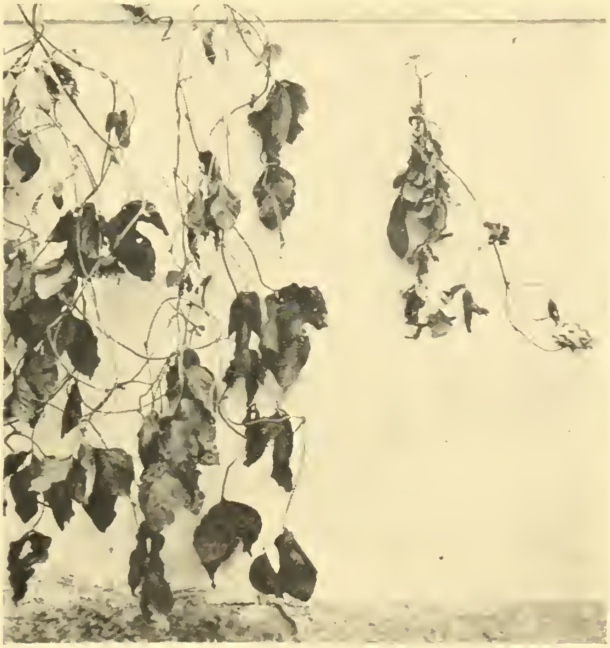
The reason for the varying length of the daily assimilation period of different plants has obviously, on one hand, been their unlike behavior toward light intensity and, on the other hand, their differing ability to continue the assimilation process in continuous light. For example, experiments indicate that the day-neutral potato varieties cultivated in North Finland are relatively well suited to the low intensity of the light there but that, in their assimilation process, they are unable to make use of the whole length of the extremely long day. Several grasses and clovers, on the other hand, seem to continue their assimilation process fairly continuously even during the longest day. There is a growing opinion that when their yield is not threatened by night frosts or the shortness of the growing season, grasses and clovers are particularly well suited to the conditions of an extremely long day. At present, however, experiments have not gone far enough to indicate the extent to which a great ability to assimilate in relatively low light intensity and the ability to continue the assimilation process continuously through the whole light period of the long day are capable of being combined in the same variety of a grass or clover species. Thus perhaps the most important problem for plant cultivation in extreme long-day regions is still unsettled.

In all Finnish experiments on the photosensitivity of plants, it has been found that limiting the amount of daylight by use of darkening boxes has resulted in a heavy drain on the energy of the most sensitive plants. For example, the Virginia soybean, a typical short-day plant, grows to a luxuriant climber more than 13 feet long in the long days of the Finnish summer but it will not blossom. When the light is cut to only 10 hours daily, this soybean will form some ripened pods but the whole plant is much smaller. Photoperiodically less sensitive soybean varieties were affected much less by a long day. The wild potato (*Solanum demissum*) is also a very sensitive short-day plant. Under long-day conditions it grows very luxuriant and forms abundant berries. When the daily light period is 10 hours only, it does form small tubers, but the whole plant has remained very small and has not been able to flower.

The length of day has, however, had only a slight effect on the energy economy of the day-neutral Harbinger potato. Even in the north of Finland, where the intensity of daylight is relatively low, it is able to satisfy its energy requirements during a rather short daily period of illumination. That it should be the Harbinger potato that has spread to the most northern parts of Finland depends chiefly, however, upon its being the earliest of the bred-potato varieties cultivated in Finland.

Generally, too, as appears from the investigations made in Finland, the photoperiodic sensitivity of the earliest-maturing plants is relatively small. This confirms the opinion that the rapidity of development, which is known to be very much affected by length of day, moisture conditions, and nutritional qualities of the soil, depends more directly on the constitution of the plant. It seems, in addition, that in the earliest-maturing biotypes, the rapidity of development is only slightly modified by environment. Apparently on this account especially, the curve of photoperiodic sensitivity of the summer cereals, which, starting from the Equator, rises rapidly, begins to sink again in the regions of the extremely long day. Thus it is to be expected that on the farms of the far north only the most day-neutral potato and summer cereal varieties are early enough. In South Finland the typical long-day summer cereal varieties that mature later also have time enough to ripen, and they give the highest yields there too.

The low temperature and the shortness of the growing season do not, however, limit the cultivation of such forage plants as cereals, harvested green now, or especially the cultivation of grasses and clovers. Even the short-day corn (maize) has given high green yields in South Finland in favorable years. And in North Finland the most general forage plants are green-harvested long-day oat varieties and various grasses and clovers. But the vines of the day-neutral potatoes also grow very luxuriant there. So it cannot now be concluded in what way the photoperiodic character of plants should be taken into account when planning fodder cultivation in North Finland.



Virginia soybeans grown in Finland's long-daylight period (left) and in controlled 10-hour days (right).

The Netherlands Farm Workers' Organization

by H. D. LOUWES

Over the past half century, farm laborers in the Netherlands have been working together for better wages and better living conditions—first, as many separate groups, and more recently, in cooperation with farmers, as a unit in the Stichting voor den Landbouw. Here, farm workers and farmers meet to discuss the economic, social, and technical problems of agriculture.

This united effort of employee and employer has already been highly beneficial to both groups. Workers have made such social gains as paid vacations and old-age insurance, and the farmers have benefited economically through a steady, cooperative labor force.

Like all associations in the Netherlands, the farm-labor groups are organized on the basis of religious principles and certain other fundamental points of view.

At the moment there are three organizations of agricultural workers—the General Netherlands Union of Agricultural Workers, which may be characterized as having about the same attitude and policy as the Labor Party in Great Britain; the Netherlands Protestant Union of Agricultural Workers; and the Netherlands Catholic Union of Agricultural Workers.

The organizations have a total membership of 80,000. This membership represents only the workers who have full-time jobs in agriculture or horticulture. Seasonal workers are not included in this number in order to avoid any misconception regarding the percentage of organized agricultural workers.

During the first years of their existence the organizations of agricultural workers acted as independent units. Later, under pressure of economic conditions, the tendency has been towards closer cooperation, out of which has developed the over-all Agricultural Workers Unions Council.

It has been the point of view of the agricultural workers' organizations that the welfare of their individual members can best be served through cooperation. They have felt that this group of workers cannot anticipate a fair and reasonable income unless agriculture as a whole is prosperous. Only as agriculture receives its fair share of the national income will agricultural workers receive theirs.

The first joint effort of farm workers and farmers occurred in the 30's when the agricultural crisis arose and Dutch agriculture was confronted with such pressing economic problems that the farmers had to ask the Government for assistance. The two groups united to support this campaign. The year before, agricultural workers had been on strike for about 6 months, but now employers and workers realized that cooperation was of the greatest importance.

This cooperation was for the time incidental. Farmers thought themselves solely responsible for agriculture's welfare and therefore entitled to discuss necessary measures.

When the agricultural crisis lengthened into years of economic depression, however, it became apparent that only permanent cooperation between workers and farmers would give results and that combination was extremely necessary since agriculture, as a whole badly organized and entirely without protection, would have to face industry and trade, both exceedingly well organized and protected.

The forming of a cooperative body would be the realization of this point of view.

In 1940 during the first year of German occupation, the first steps toward this goal were taken. For the next few years nothing further could be done since the occupation forces prohibited all activities in this field. Immediately after the war, however, building on the original idea, a cooperative body was set up and called Stichting voor den Landbouw.

Here, all those engaged in agriculture or horticulture—farmers as well as workers—began working together in economic, social, and technical fields.

In this institution, agricultural workers are jointly responsible for the economic and technical position of the agricultural industry.

Agricultural workers are represented, therefore, on the committees responsible for the activities in the various sections of the Stichting that deal with eco-

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Mr. Louwe is President of the Stichting voor den Landbouw, The Hague, the Netherlands.

nomic and social questions, on the understanding, however, that farmers' organizations nominate twice as many representatives as agricultural workers' organizations. In sections that are dealing with typically social questions the representatives are nominated on a fifty-fifty basis so that in these matters agricultural workers and farmers have the same number of votes.

The Stichting voor den Landbouw has already been successful in many ways that are of great importance to agricultural workers. Through its efforts, labor conditions throughout the country have been improved. Steps have been taken to get for agricultural workers wages and various social measures comparable to those in industry. This program, though not fully realized, has attained for farm workers—both full time and seasonal—vacations with pay and an old-age insurance, a plan under which annuities will be paid to retired workers and eventually to their widows and orphans as well.

Looking at these gains, one would feel inclined to conclude that only the agricultural workers enjoy the advantages of this employee-employer cooperation. This is not the case, however, since in the economic field farmers and market gardeners obtained results made possible only through the cooperation of the agricultural workers. For example, agricultural workers as well as those from industry and trade are represented on Unions Committees, which have an important voice in the discussions on policies concerning wages and prices. Farm workers, being jointly responsible within the framework of the Stichting voor den Landbouw for the economic well-being of agriculture and being well informed on ways and means of determining agricultural prices, assert themselves in the Unions Committees when wages and prices or a possible lowering of food prices are discussed. Without this cooperation and the support of the agricultural workers in the Unions Committees, there would not be the degree of economic balance between farm and industrial prices that farmers now enjoy.

It is a well-known fact that there is a tendency—not only in the Netherlands but throughout the world—toward a balancing of wages and prices at the cost of agriculture, in other words, toward a manipulation of farm prices in favor of the industrial workers' wages.

Finally mention may be made of the fact that through the cooperation of agricultural workers and farmers in the Stichting voor den Landbouw, there exists in the Netherlands an authority that promotes and fosters the interests of both agriculture and horticulture on the Governmental level. Organized agriculture is now so strongly unified that the Government fully accepts its views.

Since in this institution farmers and farm workers are working closely together, it is difficult for parties to be played off against each other. This fact is important when agricultural interests are discussed on a Governmental level.

During their 50 years' existence the agricultural workers' organizations have realized that the interests of their members are closely allied to those of their employers. A feeling of solidarity is growing among farmers and farm workers. At the moment organized agriculture, though proportionately not so numerous as 50 years ago, has a more imperative voice in all discussions.

Planting potatoes in the Netherlands.

1950 World Food Situation

With the Northern Hemisphere in the midst of spring planting and with winter crops near harvest, it appears that 1950 will bring further improvement in the world food situation—already at its best level since the war. The condition of crops sown for harvest this spring and summer is reported generally good in most countries of the Northern Hemisphere.

World food production in the 1949–50 consumption year (July 1 to June 30) is slightly below 1948–49, but carry-overs from last year's large crops have permitted continued improvement in consumption. In many countries, particularly in the Far East, however, consumption still is below prewar.

The 1949–50 *World Food Situation*, published in January by OFAR, estimates 1949–50 food production at only about 1 percent below the preceding year, in terms of calories, with moderate declines in cereals, rice, potatoes, and sugar largely being offset by increases in fats, dairy products, meats, and fruits. The *World Food Situation* summarizes food supply, reviews production and trade in major commodities, and reports the winter crop outlook in the Northern Hemisphere.

According to that report, world food production during the past 2 years has been 2 to 3 percent above prewar, but, since world population is 10 percent higher, world food output per capita still is below prewar years. This is being only partly offset by more careful utilization of supplies.

Improved food supplies in 1949 made it possible for most European countries to remove or modify their food-rationing programs. The average diet also improved with increased consumption of fats, meats, and dairy products, but the proportion of these foods in the average diet still is relatively low.

World production generally has recovered to such an extent during the past 2 years that the main problem now is one of marketing rather than one of food deficiency. This is evidenced by mounting surpluses in the so-called hard-currency areas and unfilled consumption needs in deficit areas.

Indications are that changes in the production of most basic foods in 1949 were slight. World rice production was nearly 3 percent below last year but slightly above average. Exportable supplies for 1950 are also down slightly and world trade in rice is expected to be less than half of prewar.

For the second year in a row, world production of wheat and rye was good and exceeded the prewar average despite declines in the United States and China. World production of feed grains, particularly corn, was also good and should contribute to continued recovery in the world livestock situation during 1950. However, unfavorable prospects for the corn crop in Argentina, formerly the world's leading exporter, may result in little or no exports of feed grains from that country during the coming year.

Raw-sugar production at 36.6 million tons was slightly less than last year but still almost 6 percent above the prewar average. Supplies of sugar are ample for world needs and rationing of this commodity has been abolished in most countries.

World potato production was well below both 1948 and prewar output, but the quantity available for food in 1949–50 is not expected to decline materially since large amounts of the previous year's production were fed to animals. Production of pulses is only slightly below last year and more than 15 percent above the prewar average. Supplies of most fruits are far above prewar and higher than last year; international trade in these commodities is seriously hampered by the dollar shortage.

Supplies of edible fats and oils, including palm oil, were 7 percent higher than in 1948 and slightly above prewar for the first time, but increases have not occurred uniformly in all types. Production in several major exporting areas, however, continues below prewar, and exports are not expected to equal those of last year and will remain considerably below prewar.

Recovery of livestock numbers, particularly in Europe and Australia, continued from the postwar low. World production of meat was above prewar for the first time. Similarly, production of milk, particularly in Europe, continued its improvement; combined production in important countries was below the postwar peak of 1947, largely because of decreases in North America.

Europe

The food situation in Europe continued to improve during 1949 and is expected to show further recovery in 1950 if crop conditions remain favorable. Some increase in fall-sown crops for harvest this summer was reported. Crop conditions in midwinter were generally satisfactory and fertilizers, machinery, and other farm supplies are increasingly available.

European growing conditions in 1949 varied considerably for individual crops, but over-all food supplies benefited from moderately increased production of the all-important grain crop. Output of bread grains and coarse grains was larger in 1949 than in 1948. The 1949 potato crop was considerably smaller than that of the preceding year. Production of sugar in 1949 continued at approximately the 1948 level.

Output of vegetable oils increased substantially in 1949 largely as a result of a sharp increase in olive oil production in Italy, Spain, Portugal, and Greece where the harvest was very poor in 1948. Forage yields varied. Decreases in production of fodder roots were reported for France, the United Kingdom, and Western Germany, with damage to hay and pastures from drought reported in parts of both Western and Eastern Europe.

In comparing 1949 crop production with prewar, European output of bread grains and potatoes was still only 92 and 87 percent, respectively, of the 1935–39 average. In the case of coarse grains, barley alone attained prewar production in 1949, oat and corn production reaching only 85 and 95 percent, respectively, of an average prewar crop. Sugar production in both 1948 and 1949 was about equal to prewar. The output of vegetable oils from the 1949–50 harvest is estimated to be much larger than the prewar average.

A greater output of livestock and livestock products in 1949–50 is expected to make an important contribution toward increasing food availabilities for the year. Livestock numbers early in 1949 were significantly higher than in 1948, continuing the recovery from the depressed postwar levels.

It is anticipated that this year most countries will produce more meat, milk, and animal fats than in 1949, which in turn was well above the 1948 level. A substantial increase in egg production also is considered likely. Production of meat, milk, and animal fats in 1950 will still be lower, however, than average prewar production.

Gross food production for the 1949–50 consumption year, in terms of calories, will probably be slightly greater than in 1948–49 and approximately equal to prewar. It must be borne in mind, however, that the European population in 1949–50 is estimated at about 6 percent above prewar.

There was a strong trend away from rationing and price controls in 1949. France, Italy, Belgium, the Netherlands, Sweden, Switzerland, and Hungary no longer ration any food items. Other European countries still continue to ration foodstuffs in varying degrees, although even in these countries the number of items rationed decreased last year.

Soviet Russia

The postwar recovery of Soviet agriculture continued in 1949 even though weather conditions were unfavorable, especially during the harvest season for small grains. Indications are that the food situation has improved, especially compared with the stringent war and early postwar years. This improvement is reflected in the greater availability of bread, the principal item of the Russian diet, and a number of other staples.

The total area of all crops harvested in 1949 increased by about 15 million acres over 1948 figures and was around 345 million acres, compared with 378 million acres in 1938 and the 1950 goal of 392 million. Much of the increase in acreage was in wheat, which suffered a drastic decline during the war. Potatoes, fibers (cotton, flax, and hemp), sunflower seed, grasses, root fodder, and silage crops also showed increases in acreage.

Preliminary estimates indicate that total production of the five grains—wheat, rye, oats, barley, and corn—was 82.6 million short tons, compared with 80.6 million in 1948 and a 1935–39 average of 95.6 million tons. The increase over the 1948 production of about 2 million tons is the result of the larger acreage. The potato crop in some regions suffered from excessive rain. All reports, however, point to a good sugar-beet crop. Favorable growing conditions were also reported for root crops and hay.

Middle East

Except for the severe winter in Turkey and Iran, which greatly reduced the acreage of winter grains, conditions for food production in most of the Middle Eastern countries during 1949 were generally favorable. As a result of these winter-grain shortages, this area will be a larger than usual importer of bread grains. The supplies of nuts, olive oil, and dried fruits available for export, however, are likely to be as substantial as usual.

Better than average crops were harvested in Egypt, Syria, Lebanon, and Iraq. In Turkey, also, the crops of olive oil, oilseeds, nuts, and grapes were above average, but the important cereal crops were considerably reduced. Consequently, this country, which is normally an exporter of grains, will require about 330,000 short tons of imports during 1949–50. Similar crop conditions were experienced in Iran and about 220,000 short tons of cereals will be needed for the 1949–50 consumption year.

Far East

In the Far East, economic dislocation, political uncertainty, and civil war were the dominant factors in the food situation during 1949. Material declines in food production in China, Burma, and Indonesia overshadowed the gradual improvement that occurred in most of the other countries of the region.

Rice production in the Far East during 1949–50 is about 3 percent below that of a year earlier. Production of several other foods was larger and, with the greater food availabilities outside the area, there are prospects of improved food consumption everywhere except in China Proper. Food supplies on a per capita basis, however, continue considerably below prewar and the region as a whole is still a large net importer of food products.

There is famine this year in China, where the most serious production declines occurred. Total production was 10 percent below that of 1948, with rice down 8 percent and wheat 11 percent. Taiwan (Formosa) and Manchuria each has a surplus of grain for export.

Both Japan and South Korea had good crops in 1949. Japan harvested one of the largest rice crops in history and Korea has an exportable surplus of rice for the first time since the war. Production in Ceylon, Malaya, and the Philippines is slightly above that of last year, but population increases have canceled the possibility of net per capita gains from domestic production. A decline in the output of rice, corn, and potatoes in Indonesia places that country in a less favorable position than it was a year ago.

The food situation in India and Pakistan was more favorable at the beginning of 1950 than a year earlier. Pakistan had a favorable crop year and wound up the harvest season with more than 400,000 tons of wheat for export. The "Grow More Food" campaign in India, plus reasonably favorable crop conditions, resulted in a slightly increased food supply. India, however, is still only 90 percent self-sufficient in food.

Indications are that the surplus-rice area comprising Burma, Thailand, and French Indo-China will have less rice available for export than in 1949.

Oceania and Canada

The reappearance during 1948–49 of problems of marketing and surpluses was particularly evident in the three principal exporting Dominions of the British Empire where the basic pattern of agriculture is production of food for export, chiefly to the United Kingdom, in return for industrial goods. Because Australia and New Zealand are firmly within the so-called sterling bloc, these tendencies were not as obvious there as in Canada where the dollar problem had, by the end of 1949, made very difficult the course of negotiations for export contracts to the United Kingdom.

The British shortage of dollars had seriously upset the Canadian egg and poultry market, and it was only by reducing prices sharply and postponing a part of the wheat deliveries that it was possible to negotiate contracts for bacon and cheese.

Currently, levels of food production in all three Dominions assure that they will be able to meet all export commitments, especially with the United Kingdom. With further improvement of the world food situation, it may be expected that there may again be problems of surpluses, but governments generally are equipped to take action to stabilize the prices paid to farmers. The International Wheat Agreement in particular is designed both to stabilize prices and to obtain guaranteed markets for specified quantities of wheat and flour.

Africa

Food production in central and southern Africa was sharply reduced by widespread drought during much of 1949, but all countries except British East Africa, Rhodesia, and Nyasaland appear to be in a position to maintain normal or nearly normal food supplies for the 1949–50 consumption year. Food shortages were reported in Northern and Southern Rhodesia and Nyasaland, and famine conditions exist in parts of Tanganyika. The drought has greatly affected production of meats and dairy products in the Rhodesias which normally produce surpluses for other African areas.

Latin America

Adverse weather conditions during 1949 lowered production of food crops in Latin America, and exports were somewhat below previous postwar years. Supplies for domestic use, however, were generally adequate, and food consumption was probably at an all-time high. Export controls were employed in practically all countries to insure adequate food supplies for the domestic market. In some cases these controls resulted in drastic reductions in exports. A general increase in food consumption and unfavorable weather in a few countries indicate that the exportable surplus of food from Latin America in 1950 will not exceed the quantity available during 1949.

Most of the coffee-producing countries in Latin America harvested crops that were about normal in 1949 and expect little change in production this year. Exportable production of coffee in 1949–50 is forecast at 24,589,000 bags, compared with 27,478,000 in 1948–49 and a 1935–36 to 1939–40 average of 31,900,000. Supplies of wheat available for export during 1950 are expected to approximate those of 1949, but a substantial increase in exportable surplus of meat is expected.

Cuban sugar production in 1950 will be somewhat lower than last year because of drought in late 1948 and early 1949. The 1950 crop has been estimated at 5,300,000 short tons. Mexican crop production in 1949 in the central and southern part was definitely lower than in 1948 because of drought, but in northern Mexico unusually large amounts of rain during the growing season resulted in larger crops than usual. During 1950 Argentina will continue to have plentiful food supplies with important quantities for export but with reduced prospects for exports of corn.

INTERNATIONAL *Agricultural News*

Grass Disease in Colombia Identified

The first step in eventual control of a serious disease of Imperial and Micay pasture grasses in Colombia has been taken in the form of successful isolation and identification of the responsible bacteria. Credit for the work goes to *Dr. Mortimer P. Starr,* bacteriologist of the College of Agriculture, University of California, who worked with a Colombian pathologist on the problem for 3 months during the last half of 1949. His trip was made possible through the cooperative efforts of the United States Department of Agriculture, the Agricultural College of Medellin, Colombia, and the National Federation of Coffee Growers.

In investigating the disease, whose cause had not previously been determined, Dr. Starr reported that in some regions of Colombia "field after field of Imperial grass, which because of its significance has been described as 'the alfalfa of Colombia,' was found infected. The yield of fodder from such fields was frequently less than one-tenth or one-twentieth of normal—with a consequent disabling of the important dairy industry. The closely related Micay grass, which had been used as permanent pasture, was for all practical purposes wiped out by this disease in many areas."

Dr. Starr said that the Facultad Nacional de Agronomía at Medellin, Colombia, extended its full facilities and cooperation in conducting the study. Laboratory investigation revealed a bacterial organism as the cause of the disease. It was isolated and characterized to a degree where workers continuing the project, to find controls, will have no trouble identifying it.

Dr. Starr reported, as a side light, that the bacteria affecting the grasses was found to be quite similar in characteristics to the one causing leaf scald disease of sugar cane ("Java gumming disease"), and that this similarity is being investigated further.

Dr. Stewart Aids U. S.–Colombian Program

Dr. H. A. Stewart, in charge Animal Genetics and Swine Research at North Carolina State College, went to Colombia last April in furtherance of a cooperative artificial insemination program between the National Division of Livestock in Colombia and North Carolina State College. Under this program, North Carolina State is receiving semen of the unique Romo-Sinuano breed of cattle for use in its animal research program, and Colombia, in turn, is receiving that of Holstein, Jersey, Aberdeen Angus, Shorthorn, and other United States breeds.

In similar fashion, during the next few months, Dr. Cormane, veterinarian of the Colombian Livestock Division, will visit several United States livestock experiment stations and learn about artificial insemination programs that are being carried on.

This exchange of livestock technicians and germ plasm was made possible by the wholehearted cooperation of several agencies—among them, the Departments of Agriculture of the two countries, the United States Department of State, and North Carolina State College.

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